Environmental Statistics and Decision Making
Stat 685/485
Spring 2015

Time: Monday, 5:15 to 6:30 pm, students must stay the entire period and work in groups;

Attendance: Required, students must attend all classes

Location: Sewell 207, lab groups are expected to meet other times

Objective: Students are expected to acquire the skills to manage large investigations of environmental data from optimal sampling plans to interpretation as both a team lead and team member. Students will gain a clear understanding of the statistical methods, and develop strong communication, planning, and presentation skills.

Outcomes: Students will master the environmental statistical methods covered in this course, and attain competence in handling real-world environmental data, presenting and interpreting this data and communicating statistical findings.

Prerequisite: Two semesters of basic statistics

Grading: Four professional data analysis presentations (12% each), hard copy also required, homework and four homework assessments (40**%), no late assignments accepted,** Homework assessment 1-3, grading is 100 or 0, retake for 80% or 0 on second try, no retake on Homework assessment 4. Homework assessments are individual work under Honor Code, projects are collaborative within group class participation (12%). All students are required to contribute equally to all projects. Part of the student project grade will be based on group member assessment of equal contribution. Each student will be responsible for all aspects of the project. Graduate and Undergraduate students will be graded separately.

Text: Instructor text and EPA guidance. Must be printed and brought to class.

Instructor: Loren Raun, raun@rice.edu , DH 2082, office hours by appointment

Module 1: Sampling Techniques

January 12	Introduction- class format, software, overview/nature of the problem, identifying the question, SRS, stratified, sample size, two stage
January 14	lecture, group work
January 19	**MLK Holiday, no class**
January 21	lecture, group work
January 26	lecture, group work
January 28	lecture, group work, **homework assessment 1**
February 2	lecture, group work,
February 4	**Class Presentation 1**

Module 2: Exploratory Data Analysis

February 9	normality, central tendency, variability, outlier
February 11	lecture, group work, class ends at 6:00
February 16	lecture, group work

February 18 lecture, group work
February 23 lecture, **homework assessment 2**
February 25 **Class Presentation 2**

March 1 to March 8 **Spring Break**

Module 3: Detecting the Presence or Absence of Contamination

March 9 hypothesis tests –compare to a standard, compare to background, multiple comparisons
March 11 lecture, group work
March 16 lecture, group work
March 18 lecture, group work
March 23 lecture, **homework assessment 3**

Module 4: Detection Monitoring/Trend Analysis/Prediction

March 25 correlation (time, space, space/time), regression
multiple regression, trends
March 30 **Class Presentation 3**
April 1 lecture, group work
April 6 lecture, group work
April 8 **homework assessment 3**
April 13 lecture, group work
April 15 lecture, group work
April 20 **Class Presentation 4**
April 22 lecture, **homework assessment 4**

-Any student with a documented disability needing academic adjustments or accommodations is requested to speak with me during the first two weeks of class. All discussions will remain confidential. Students with disabilities will need to also contact Disability Support Services in the Ley Student Center.
-Course syllabus may be subject to change with reasonable advance notice, as deemed appropriate by the instructor.